

**Notice of Allowability**

Application No.

10/732,985

Examiner

Eric F. Winakur

Applicant(s)

BRODNICK ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed 4 September 2007.
2. ☒ The allowed claim(s) is/are 1,2,4-9,11-23,25,26 and 28-46.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |   |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)   | 5. <input type="checkbox"/> Notice of Informal Patent Application                     |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date _____    | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment                   |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material | 8. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance             |
|  | 9. <input type="checkbox"/> Other _____   |

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1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Christopher Scherer on 10 September 2007. Applicant agreed to amend the claims to clarify that obtaining the artifact free pulse oximetry signal is dependent upon processing (see, for example, dependent claims 11, 12, 25, 26, 40, 41) rather than directly from use of the neural-muscular transmission device, as the claims implied. Further, certain other amendments for consistency of claim terms, grammatical clarity, or to avoid positively claiming the device in relation to a body part, were agreed to as set forth below. None of the claims were amended to avoid or overcome prior art.

The application has been amended as follows:

Claim 1 was amended as follows:

1. A method of acquiring pulse oximetry and electrocardiogram signals from a patient, the method comprising:

configuring a single transducer and attaching the single transducer to a finger of a patient, wherein the single transducer includes a single electrode such that when the single transducer is attached to the finger of the patient, the [signal] single transducer is configured to acquire a pulse oximetry signal and acquire an electrocardiogram signal with the single electrode, wherein the acquired electrocardiogram signal is either one of a reference electrocardiogram signal or a non-reference electrocardiogram signal, and

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further wherein a neural-muscular transmission device is coupled to the single transducer, and includes a support member that extends to a thumb of the patient;

acquiring the pulse oximetry signal and the electrocardiogram signal with the single electrode;

stimulating the patient with the neural-muscular transmission device; and

measuring the strength of muscle contraction caused by the stimulating step;

wherein the acquired pulse oximetry signal is processed to account for effects of the stimulating step to provide [use of the neural-muscular transmission device provides] an artifact free pulse oximetry signal.

In claim 13, line 1, "10" was changed to -- 1 -- .

Claim 16 was amended as follows:

16. A device for acquiring pulse oximetry and electrocardiogram signals from an appendage of a patient, the device comprising:

a substrate that can be attached to the appendage of the patient;

at least one emitter coupled to the substrate, the at least one emitter positioned to emit radiation through the appendage;

at least one detector coupled to the substrate, the at least one detector positioned to receive the radiation emitted through the appendage, the at least one detector generating a pulse oximetry signal based on the received radiation;

an electrode coupled to the substrate, the electrode configured to generate either one of a reference electrocardiogram signal or a non-reference electro-cardiogram signal; and

a neural-muscular transmission device (NMT), wherein the NMT includes a semi-rigid support member coupled to the substrate and extending in a clam shell shape [to a thumb of the patient], such that the NMT measures the strength of muscle contractions of the patient caused by an applied stimulus and said device is configured to provide [provides] an artifact free pulse oximetry signal.

In claim 25, line 1, "24" was changed to -- 16 --.

In claim 26, line 1, "24" was changed to -- 16 --.

Claim 28 was amended as follows:

28. A system for monitoring pulse oximetry and electrocardiogram signals acquired from a patient, the system comprising:

a transducer including

a substrate that can be attached to an appendage of the patient,

at least one emitter coupled to the substrate, the at least one emitter positioned to emit radiation through the appendage,

at least one detector coupled to the substrate, the at least one detector positioned to receive the radiation emitted through the appendage, the at least one detector generating a pulse oximetry signal, and

a first electrode coupled to the substrate, the first electrode generating either one of a reference or a non-reference electrocardiogram signal;

at least one second electrode that can be attached to the patient, the at least one second electrode generating a non-reference electrocardiogram signal when the first electrode generates a reference electrocardiogram signal, and generating a reference

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electrocardiogram signal when the first electrode generates a non-reference electrocardiogram signal; and

a monitoring instrument that receives the pulse oximetry signal, the reference electrocardiogram signal, and the non-reference electrocardiogram signal, the monitoring instrument generating a blood oxygen saturation output signal and at least one electrocardiogram output signal; and

a neural-muscular transmission device (NMT), wherein the NMT includes a semi-rigid support member coupled to the substrate and extending in a clam shell shape [to a thumb of the patient], such that the NMT measures the strength of muscle contractions of the patient caused by an applied stimulus and the monitoring instrument is configured to provide [provides] an artifact free pulse oximetry signal.

Claim 42 was amended as follows:

42. A method of acquiring pulse oximetry and electrocardiogram signals from a patient, the method comprising:

configuring a transducer to include at least one emitter, at least one detector, and a first electrode and attaching the transducer to an appendage of the patient;

attaching at least one second electrode to the patient wherein the transducer is configured such that a pulse oximetry signal is acquired from the at least one detector and a reference or non-reference electrocardiogram signal is acquired from the first electrode, further wherein the at least one second electrode is configured [such that] to acquire a non-reference electrocardiogram signal from the at least one second electrode when the first electrode acquires a reference electrocardiogram signal and a

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reference electrocardiogram signal when the first electrode acquires a non-reference signal, and further wherein a neural-muscular transmission device is coupled to the transducer, and [includings] includes a support member that extends to a thumb of the patient;

stimulating the patient with the neural-muscular transmission device; and

measuring the strength of muscle contraction caused by the stimulating step [wherein use of the neural-muscular transmission device provides an artifact free pulse oximetry signal];

generating a blood oxygen saturation output signal based on the pulse oximetry signal including generating an artifact free pulse oximetry signal during use of the neural-muscular transmission device; and

generating at least one electrocardiogram output signal based on the reference electrocardiogram signal and the non-reference electrocardiogram signal.

Claim 46 was amended as follows:

46. A method of acquiring pulse oximetry and electrocardiogram signals from an infant, the method comprising:

configuring a transducer to include at least one emitter, at least one detector, and a first electrode, and attaching the transducer to a finger of the infant;

attaching at least two additional electrodes to the infant wherein the transducer is configured such that a pulse oximetry signal is acquired from the detector, a reference electrocardiogram signal is acquired from any one of the electrodes, and at least two non- reference electrocardiogram signals are acquired from the remaining electrodes,

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and further wherein a neural-muscular transmission device is coupled to the transducer, and [includings] includes a support member that extends to a thumb of the patient;

stimulating the patient with the neural-muscular transmission device; and

measuring the strength of muscle contraction caused by the stimulating step [wherein use of the neural-muscular transmission device provides an artifact free pulse oximetry signal]; and

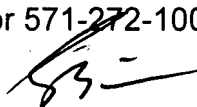
generating a blood oxygen saturation output signal based on the pulse oximetry signal including generating an artifact free pulse oximetry signal during use of the neural-muscular transmission device and generating at least one electrocardiogram signal based on the reference electrocardiogram signal and the at least two non-reference electrocardiogram signals.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric F. Winakur whose telephone number is 571/272-4736. The examiner can normally be reached on M-Th, 7:30-5; alternate Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eleni Mantis-Mercader can be reached on 571/272-4740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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